

In The Matter of)
 Merger Policy Under) Docket No. RM96-6-000
 The Federal Power Act)

³ NOI at 3.

than price regulation to set efficient prices for wholesale electric power in the United States.⁴

The current restructuring of the electric utility industry was accelerated by the Energy Policy Act of 1992,⁵ and has continued with a number of state and federal regulatory reforms. As a result of these changes, a competitive wholesale electric power market is emerging.⁶ Reliance on markets and competition rather than traditional regulation can more efficiently allocate generation and transmission resources and result in savings to consumers. FERC should assure that its merger policy is consistent with the emergence of competitive wholesale electricity markets.

The U.S. Department of Justice (Department) also reviews electric power mergers as part of its responsibilities under Section 7 of the Clayton Act, which prohibits mergers likely to lessen substantially competition in any relevant market. In conducting an analysis of mergers, the

⁴The Department has consistently supported the FERC's initiatives to restructure the electric utility industry in ways that will allow competitive wholesale electric power markets to emerge. Comments of the U.S. Department of Justice, Promoting Wholesale Competition Through Open Access Non-Discriminatory Transmission Services by Public Utilities, FERC Dkt. No. RM95-8, et al., filed August 7, 1995; Inquiry Concerning Alternative Power Pooling Institutions Under the Federal Power Act, FERC Dkt. No. RM94-20, Comments filed March 2, 1995, Reply Comments filed April 3, 1995; Inquiry Concerning the Commission's Pricing Policy for Transmission Services Provided by Public Utilities Under the Federal Power Act, FERC Dkt. No. RM93-19, filed Nov. 1993; Notice of Request for Public Comments on Regional Transmission Group Proposal, FERC Dkt. No. RM93-3.

⁵16 U.S.C. § 824 (1992).

⁶The California Public Utility Commission, for example, recently proposed a rule that requires jurisdictional utilities to reduce their ownership of certain generating facilities as part of general restructuring of the industry within that state. This will likely deconcentrate control of generation assets in the western United States and make it important that all enforcement agencies preserve the competition thereby created.

Department relies upon the Horizontal Merger Guidelines (Guidelines) issued jointly by the Department and the Federal Trade Commission.⁷

The Department urges the FERC to adopt the Guidelines as a framework for analysis of the competitive effects of mergers. Use of the Guidelines by FERC will provide not only sound competitive analysis but also consistency with the Department's own competitive analysis of mergers, limiting the circumstances in which companies proposing mergers gain FERC approval but subsequently find their transactions challenged by the Department or vice versa.

Section II describes very generally how the Department applies the Guidelines to electric utility mergers. Section III argues that a predictable and sound FERC merger policy requires adoption of efficient transmission pricing. Transmission pricing and access rules, along with physical and operational constraints, will determine the geographic scope of electricity markets. Section IV urges the FERC to undertake a rulemaking proceeding to delineate geographic markets for wholesale electricity. Section V recommends the FERC not impose conditions on mergers that are not anticompetitive. The Commission could then apply a market share screen to identify quickly those mergers that are unlikely to raise competitive issues. Finally, these Comments include an Appendix presenting a more detailed discussion of certain facets of the Guidelines as applied in the electric utility industry.⁸

⁷U.S. Department of Justice and Federal Trade Commission, Horizontal Merger Guidelines, reprinted at 4 Trade Reg. Rep. (CCH) ¶13,104 (April 2, 1992).

⁸The discussion in the Appendix is necessarily based on current and general knowledge of the electric utility industry rather than specific facts from particular investigations. Accordingly, the Appendix is intended only to assist FERC in the context of this Notice of Inquiry and does not necessarily reflect or limit the investigations the Department will conduct or its analysis it will use in merger cases.

II. THE COMMISSION SHOULD USE THE SAME ANALYSIS THAT THE DEPARTMENT USES IN ITS ASSESSMENT OF THE COMPETITIVE EFFECTS OF ELECTRIC UTILITY MERGERS

Federal and state policy are now rapidly moving the electric industry toward reliance on markets and competition to efficiently allocate generation and, to some extent, transmission resources. The result may be a very different electric utility industry with new generators, new buyers, new transmission patterns and, ultimately, significant savings for electricity consumers. The market mechanisms, however, will achieve efficient allocation only if there is sufficient competition to make the price system work.

New law and new rules give rise to increased incentives to merge for both procompetitive and anticompetitive reasons. A more competitive environment may naturally and properly give rise to incentives to match management talents with efficient scope and scale of operations. Such changes occurred in other industries - airlines, railroads, and trucking - as price and entry regulation were relaxed and competition emerged. At the same time, partially regulated firms will have increased incentives to use anticompetitive mergers to evade or preempt the unfamiliar discipline of competition. Merger policy, in conjunction with restructuring policy, will play a key role in shaping the future of competition in this industry. To preserve the competition created by restructuring, the Department urges the FERC to use the Guidelines as its framework for analyzing merger competitive effects.

The purpose of the Guidelines is to identify those mergers that likely will create or enhance market power, or facilitate its exercise. The Guidelines have been applied to hundreds of industries, and widely accepted by competition experts in law, business, and economics. Because the Guidelines are based on fundamental principles of industrial organization, their

underlying methodology can be used to analyze changes in market power created by mergers in any industry.

The Guidelines explain how to define relevant product and geographic markets. A relevant product market defines the product group within which competition meaningfully occurs.⁹ Not every product that competes for a customer's dollar is included in a properly defined product market: "For every product, substitutes exist. But a relevant market cannot meaningfully encompass that infinite range. The circle must be drawn narrowly to exclude any other product to which, within reasonable variations in price, only a limited number of buyers will turn; in technical terms, products whose 'cross-elasticities of demand' are small."¹⁰ The pivotal question in product market definition is whether an increase in price for one product would cause enough buyers to turn to other products so as to make the price increase unprofitable.¹¹

The relevant geographic market is "the area in which the seller operates and to which the purchaser can practically turn for supplies."¹² The Guidelines present a method for determining if consumers in a particular geographic area consider products from outside of that area to be sufficiently good substitutes for local supplies. If consumers in a given geographic area do not

⁹United States v. Continental Can Co., 378 U.S. 441, 449 (1964).

¹⁰Times-Picayune Pub. Co. v. United States, 345 U.S. 612 n.31 (1953). See also United States v. Ivaco, Inc., 704 F. Supp. 1409, 1415 (W.D. Mich. 1989) ("The court need not consider every conceivable, but economically unrealistic, substitute for a particular product.")

¹¹ United States v. Archer-Daniels-Midland, 866 F. 2d 242, 248 (8th Cir. 1988) cert. denied, 493 U.S. 809 (1989); Merger Guidelines §§ 1.1, 2.1.

¹² Philadelphia Nat'l Bank v. U.S., 374 U.S. 359.

consider products from outside that area as practical, good alternatives, then that geographic area is not in the geographic market.¹³

After defining the relevant product and geographic markets, the firms that participate in each such relevant market are identified;¹⁴ the participants' shares of the market are measured, and the concentration of the relevant markets are evaluated. Concentration is not the end of the inquiry, however. For concentrated markets, that is, markets with relatively few firms that own or control assets, the Guidelines call for a closer examination of the likely unilateral and coordinative effects to determine if the merger will likely cause prices to rise or service quality to fall. Evidence that entry of other competitors into the market is easy may demonstrate the merger is unlikely to cause adverse competitive effects. Furthermore, the Guidelines recognize that some otherwise anticompetitive mergers may be reasonably necessary to produce important net efficiencies that would result, on balance, in the merger benefitting competition and consumers.¹⁵

¹³Hospital Corp. of America, 807 F.2d 1388 (1986). See also Merger Guidelines § 1.2.

¹⁴The pace and scope of restructuring will affect this analysis in at least two major and possibly conflicting ways: First, increasing the number of significant competitors in relevant electric power markets will reduce the likelihood that any given merger of firms in those markets will be anticompetitive. Second, as more firms are able to participate in relevant electric power markets, a merger that would have previously involved non-competing firms may subsequently involve a combination of direct competitors.

¹⁵As a practical matter, an evaluation of the efficiencies that may result from a merger is usually not needed unless there is some concern that the merger anticompetitive. The Guidelines emphasize that the claimed efficiencies must be merger-specific and outweigh the competitive harm in the markets adversely affected by the reduction in competition caused by the merger. An efficiencies analysis does not entail a broad inquiry into potential public benefits of the merger such as the inquiry in which the Commission has engaged as part of its prior merger analysis.

1. Some Geographic Market Definition Issues of Wholesale Electricity Markets

As in some other industries, geographic market definition in the electric utility industry can be a complex exercise, with the availability of transmission between buyers and sellers a key issue.¹⁶ While transportation costs typically define geographic market boundaries, in this industry actual physical constraints on the transmission system are also significant. No matter how many potential competitors have power to sell, electricity cannot go where there is no transmission capacity to take it. Where such constraints change due to line loadings on interconnected systems over the course of a day, week or year, the analysis can be further complicated. An increase in congestion on transmission lines under higher load conditions can change the geographic boundaries of a market, potentially partitioning one geographic market into several. These physical constraints and congestion conditions are idiosyncratic of each transmission system and, of course, vary across utilities and geographic areas in ways that must be recognized by merger analysis.¹⁷

¹⁶The Commission's product market focus in previous merger proceedings has been on wholesale products (short and long term energy, capacity, transmission). To the extent that retail competition is permitted or soon may be, the Commission should also examine the impact of mergers on actual and potential retail competition. The Commission has both the authority and the responsibility to do so. *FPC v. Conway*, 426 U.S. 271 (1976).

¹⁷ Moreover, the existence or severity of physical transmission constraints can vary, depending upon how a system is operated. A utility (or several utilities jointly) could be able to operate a system strategically in a way that needlessly prevented certain generators from operating or participating in a market. Therefore, the likelihood of such conduct, and whether it would be facilitated by a merger, could be an important issue in some situations.

2. Some Market Share Issues in Electricity Markets.

The Guidelines analysis requires assignment of market shares and measurement of concentration. The goal of antitrust merger analysis is to determine what effects the merger will have on competition in the markets in which the merging firms compete. Changes in market structure such as market share and market concentration are indicators of the potential for the merged firm to behave noncompetitively.¹⁸

As in other industries, the proper analysis of market share and concentration will depend on the specific facts involved in each transaction. For example, the marginal costs of generation units in the same geographic area may vary greatly. If markets are clearing properly, generators that produce power for use in that area will be "turned on" in economic merit order, from least cost up through greatest cost until demand is filled. If there is a market-clearing price, the units most affecting price are at the margin of the market as a whole. A firm controlling these marginal units may be able to influence price by restricting output from the marginal plants, which would raise the market-clearing price. This will be true even if the firm controls a very small percentage of the total generation available for sale in the market. Merger analysis must assess the profitability of such a strategy, which will depend on the cost characteristics of the firm's entire portfolio of units. Determining the anticompetitive effects of a merger involving ownership of these marginal units therefore requires a careful assessment of the firms in the market under specific load conditions.

¹⁸ As discussed further in the Appendix, these effects may be the result of either unilateral or coordinated actions.

III. THE FERC SHOULD IMPLEMENT EFFICIENT TRANSMISSION PRICING AS SOON AS POSSIBLE

It is vital that the FERC address transmission pricing policy. The efficacy of merger analysis and policy depends in part on FERC's adopting a rational transmission pricing policy. Transmission pricing and access rules, along with physical constraints, will determine the location of the alternatives available to buyers and sellers, and hence the geographic scope of electricity markets. FERC should promptly replace its case-by-case approach to transmission pricing with a general rule, and thereby reduce the risk of having a merger policy that is inconsistent, inefficient or inequitable.

Merger analysis is forward-looking. It must rest on reasonable assumptions about regulatory and market institutions in the future. A clear articulation of the Commission's general transmission pricing policy will make it easier for utilities, their customers, the Commission, and antitrust enforcement agencies to reach conclusions about which generators will actually prove to be practical alternative sources for a buyer's electricity needs. Predictable transmission pricing will allow better accurate assessment of the impact on competition of a merger that removes from the market one of those alternatives.

In addition, it is important that the FERC implement transmission pricing that is efficient. Efficient transmission pricing policy is vital not only to sound merger policy but to the creation and preservation of competitive generation markets. For generation markets to be competitive, buyers and sellers must have a variety of alternatives from which to choose. If transmission pricing is too high, then, in the short run, generation markets will be too small, that is, buyers will have fewer economic alternatives for purchasing generation. If transmission pricing is too low, then, in the long run, generation markets will again be too small because there

is no economic incentive to expand currently constrained transmission to be expanded to accommodate new patterns of trading in the competitive generation market.

Furthermore, inefficient transmission pricing can adversely affect the evolving structure of the electric industry. It may create artificial incentives for companies to merge in order to internalize the costs of transmission that would more efficiently be provided by third parties if the companies had confidence that transmission would be economically available. This danger is present whether the pricing is too high or too low. If the price of transmission is too high for a net generator, it may merge to internalize the high transmission cost. For example, the Commission references comments that suggest firms may merge to avoid transmission rates that "pancake" across utilities.¹⁹ Postage stamp rates set at average embedded cost on an unconstrained system may preclude the dispatch of the most efficient units or the efficient location of generating units. On the other hand, if the price of transmission is too low, a net transmission firm may merge with its wholesale power customer in order to internalize the opportunity cost of supplying transmission to another at an uneconomic price.

The answer to these difficulties is neither to approve otherwise anticompetitive mergers to neutralize inefficient transmission pricing, nor to abandon rigorous market analysis. FERC should not treat circumvention of inefficient transmission pricing as a public benefit of mergers. Rather the FERC should eliminate these artificial incentives for mergers, and facilitate merger analysis, by announcing reasonable and consistent transmission pricing and access rules. As the

¹⁹NOI at 4.

Department has previously commented.²⁰ flexible pricing and tradeable ownership-like transmission rights would significantly reduce the inefficiencies in present pricing.

It remains to be seen if the FERC's recently instituted open-access rules will effectively limit a vertically integrated utility's ability to use control of transmission lines to limit entry or otherwise disadvantage competing generators. FERC should continue to examine whether a merger enhances a firm's ability or incentive to operate its transmission in ways that would protect the firm's own generation from competition.

Even if the FERC's new, open transmission access conditions are effective, they do not obviate the need for rigorous merger analysis. Where effective, open access can only broaden the scope of geographic markets, thereby allowing more buyers and sellers to participate in wholesale power markets. However, access policy is not the only factor affecting market participation; both physical and pricing constraints on transmission limit the geographic size of markets. The potential benefit of open access is the attainment of sufficient competition to efficiently replace price regulation in many areas with market discipline. Merger policy should preserve that potential through careful analysis and identification of potentially anticompetitive mergers.

²⁰ Inquiry Concerning the Commission's Pricing Policy for Transmission Services Provided by Public Utilities Under the Federal Power Act, FERC Dkt. No. RM93-19, Comments of the U.S. Department of Justice filed Nov. 4, 1993.

IV. THE COMMISSION SHOULD NOT USE MERGER POLICY AS A TOOL TO REDUCE GENERATION CONCENTRATION, OR IMPLEMENT OPERATIONAL UNBUNDLING UNLESS THESE MEASURES ARE NECESSARY TO REMEDY THE ANTICOMPETITIVE EFFECTS OF A MERGER.

Imposing conditions on merging parties that are neither required to remedy a particular effect of the merger nor imposed upon the electric industry in general can have adverse competitive effects. Using conditions in this way acts as a "tax" that discourages procompetitive mergers that could benefit the public. Efficient mergers have a role to play in reshaping an industry undergoing substantial regulatory and structural change. Discouraging such efficient mergers by imposing additional regulatory costs can lead to a significant loss.

For these reasons, the Department devises transaction-specific remedies to resolve only those competitive problems raised by particular merger proposals. For example, where a merger creates a competitive problem that divestiture of specific generation could solve, or where releasing control of transmission through creation of an Independent System Operator would alleviate competitive concerns, the Commission should impose such conditions and approve the restructured merger. In contrast, selective imposition of competitive obligations such as shedding generation or establishment of an Independent System Operator on mergers that do not raise competitive issues could discourage procompetitive mergers. Finally, if no set of conditions can remedy significant anticompetitive effects of a proposed merger, the Commission should not approve the merger. The Department will, of course, challenge all mergers that violate the competition mandate of the Clayton Act.

V. THE COMMISSION SHOULD UNDERTAKE A RULEMAKING DESIGNED TO HELP DELINEATE GEOGRAPHIC MARKETS

Because geographic market delineation has the potential to be the most important aspect of the competitive analysis of electric utility mergers (as it has been for mergers adjudicated under the antitrust laws), the Department urges the Commission to concentrate its immediate energies on this aspect of the analysis. The Department suggests that the Commission undertake a technical conference or rulemaking (or both) to systematically delineate relevant markets for the entire United States.²¹ This will vastly facilitate FERC's timely review of merger applications, and make possible the consistent application of safe harbor levels of market shares and concentration below which mergers would be deemed not to pose a significant threat to competition. These safe harbors could be applied without resort to the hearing process.

It would serve the goals of efficient administration of the Commission's responsibilities under the Federal Power Act for the FERC to undertake a comprehensive market delineation process just once and outside the context of a particular merger review. Accurate market delineation could be accomplished by use of a complex model of the electric power network.

²¹ The Department has two major mechanisms for its own investigation of mergers. As with all other mergers, electric utility mergers cannot be consummated until the parties proposing the merger submit certain basic information under the Hart-Scott-Rodino Act. 15 U.S.C. § 801. In addition, the Department has Civil Investigative Demand authority to require production of information relevant to an antitrust investigation. 15 U.S.C. §§ 1311-1314. The Commission does not have the same compulsory process that the Department has to enable it to investigate proposed mergers. On the other hand, FERC has broad rulemaking authority with which to gather market information.

While such models already exist, their use for this purpose would be novel, and the precise procedures for doing so, and the assumptions to be made in the process need to be worked out. An open process would facilitate maximum participation in this task by affected utilities and other interested parties.

With geographic markets defined, FERC could then determine market shares and concentration in any geographic market in the United States and apply safe harbors for mergers based upon changes in concentration. If a merger was not within a safe harbor, the data would serve as the starting point for more substantial merger analysis. This should enable the Commission to reduce the number of adjudicatory proceedings devoted to merger analysis.

Without the systematic organization of such information, streamlined screening would be impossible or inaccurate, and substantial efforts would be duplicated where the same markets or same firms were involved in multiple mergers. Although transmission and generation resources will change over time, the baselines established will be easier to update than to establish anew with each merger.

VII. CONCLUSION

The FERC is likely to be faced with a growing number of merger applications. Accurate assessment of the competitive effects of those mergers will play a vital role in the FERC's ability to support the continued growth of competition in the wholesale electric power market. FERC's application of the Guidelines in its analysis will not only assure a rigorous analysis of competitive effects, it will limit the opportunities for inconsistency in the competitive assessment of mergers by the FERC and the Department. FERC's transmission and access policies, by

influencing the breadth of the geographic area in which buyers and sellers can turn for alternative transactions, will also be essential to an efficient outcome as the industry restructures.

Respectfully submitted,

Anne K. Bingaman
Assistant Attorney General

David Turetsky
Deputy Assistant Attorney General

Carl Shapiro
Deputy Assistant Attorney General

Gregory J. Werden
Director of Research

Jonathan E. Henly
Economist
Economic Analysis Group



Roger W. Fones
Chief
Transportation, Energy
and Agriculture Section



Jade Alice Eaton
Attorney
Transportation, Energy

May 7, 1996

APPENDIX:

Application of the Horizontal Merger Guidelines to Mergers of Electric Utilities

The Horizontal Merger Guidelines promulgated in 1992 by the U.S. Department of Justice and Federal Trade Commission (Guidelines) articulate a general merger analysis applicable to all industries. The application of that analysis to any particular merger, however, must be carefully tailored to the particular facts it presents. The precise nature of the competitive process and market institutions in each industry dictate many of the specific details of the proper competitive analysis under the Guidelines. In this respect the electric power industry is no different from any other. The electric power industry does differ from others in two respects.

First, competition in the industry is affected in fundamental ways by the technology of the industry, i.e., by the myriad physical, or practical operational, constraints imposed by the physics of AC power systems. The physical laws under which the system operates are fundamentally different than those for any other industry, and unique competitive circumstances may arise.

Second, the electric power industry is in transition. Significant changes are quite likely (in at least some states) with respect to the vertical structure of the industry, how retail service will be regulated, how transmission prices will be set, in what sorts of organized markets electricity will trade, and how the utilities will compete. Consistent with the forward-looking analysis contemplated by the Guidelines, the competitive analysis of an electric utility merger should be premised on the likely future course of the parties to the merger at the time of the analysis.

The Guidelines set forth an analytical paradigm the purpose of which is to identify mergers that likely will create or enhance market power, which is the ability of a firm or group of firms to maintain prices above the competitive level.¹ The Guidelines articulate a largely structural analysis, which proceeds by delineating relevant markets in which to analyze competition, identifying competitors in these markets, assigning shares and measuring concentration, assessing likely competitive effects in light of industry structure, considering the potential effects of new entry, and finally assessing any offsetting efficiency benefits. The balance of this Appendix illustrates how this paradigm could be applied to mergers of electric utilities.

¹ Buyers also can exercise market power by maintaining prices below competitive levels. Although not specifically discussed below, buyer market power can also be a concern in the electric power industry.

I. Market Delineation

The first step in the Guidelines' analytical paradigm is the delineation of relevant markets. The concept behind the Guidelines' approach to market delineation is that a market for purposes of competitive analysis is a product and associated area in which a hypothetical monopolist would possess significant market power. Formally, the Guidelines define a market as

a product or group of products and a geographic area in which it is produced or sold such that a hypothetical profit-maximizing firm, not subject to price regulation, that was the only present and future producer or seller of those products in that area likely would impose at least a "small but significant and nontransitory" increase in price.²

In practice, the hypothetical monopolist test is first applied to an initial "candidate market" consisting of a narrow group of products and area, and then to successively broader candidate markets until a hypothetical monopolist would exercise significant market power.

Although still broader product groups and geographic areas typically also satisfy this test, the Guidelines generally take the relevant market to be the smallest, and hence, first candidate market that satisfies this test. While substitutes outside the smallest market can be expected to exercise some constraining effect on the exercise of market power inside it, that effect is not so great as to preclude the exercise of significant market power inside it, and delineating a broader relevant market would run the risk of masking the potential for a significant exercise of market power in the smallest market.³ The threshold typically used for what is a "significant" price increase is five percent above levels that likely would prevail absent the merger.⁴

² A "small but significant and nontransitory" increase in price is employed as a methodological tool for the delineation of markets using the hypothetical monopolist paradigm, but it is not a tolerance level for price increases from mergers.

³ This "Smallest Market Principle" is applied flexibly, and there is no rigorous attempt to precisely determine the smallest market. Convenient break points, such as well defined geographic boundaries, are commonly used even if the result is markets somewhat larger than the literally smallest possible markets that satisfy the Guidelines' test.

⁴ In most industries it is best to assume that current prices would persist absent the proposed merger, but the current state of flux of the electric power industry could make this assumption questionable. Introducing greater competition and changing market institutions may be expected to change price levels. One way to establish a reasonable base line for the competitive analysis would be to simulate the industry in a computer model incorporating likely future structure and organization.

The degree to which a hypothetical monopolist would possess market power is determined largely by the demand conditions it faces. A hypothetical monopolist has no market power when consumers have very elastic demands for what it sells. Elastic consumer demands (i.e., demands that are highly responsive to price changes) result from the availability of good substitutes or from consumers' general willingness to do without. A hypothetical monopolist has significant market power when consumers have relatively inelastic demands for what it sells.⁵ Thus, market delineation is largely a process of exploring the demand that would be faced by a hypothetical monopolist and the substitutes available to consumers.

While in abstract terms the product and geographic boundaries of markets must be delineated simultaneously, in practice it is both convenient and typically necessary to separate the delineation of product and geographic boundaries to some extent. In antitrust parlance, the product dimensions of markets are referred to as "product markets," and the geographic dimensions of markets are referred to as "geographic markets."

A. Product Markets

There are potentially many different relevant product markets in the electric power industry. Utilities may compete to sell a variety of products, and the time dimensions of these products are important because storage of electric power is inherently expensive and practically limited. Consequently, one could delineate separate relevant markets for each increment of time (most likely, each hour or half hour) and perhaps even delineate additional products for forward and futures transactions. There is no reason, however, to consider separately markets for each time period unless underlying competitive conditions actually differ significantly from one period to the next. Demand for power tends to vary with some regularity over the course of the day and season, as do the availability of generation resources such as hydroelectric power and transmission loading conditions. It is likely to be the case that all the hours in a year can conveniently be aggregated into relatively few scenarios presenting distinct competitive conditions that each arise with sufficient frequency to be of concern. Aggregating hours that

⁵ Along with elasticity of demand, the other important determinant of the extent of market power is the relationship between price and marginal cost. The greater the difference between the two, the smaller the elasticity of demand must be before a monopolist would impose any given price increase.

present differing physical conditions is appropriate as long as essentially the same competitive conditions are presented by the differing physical conditions. In the context of a particular merger, it may also be the case that one competitive condition clearly raises greater concerns than all others, so only it need be studied in detail. Thus, with respect to the temporal dimensions of product markets, it is possible in the context of a particular merger that just one scenario matters.

Differences in competitive conditions also may determine whether it is useful to delineate particular product markets along lines other than time. Transactions of differing durations (from one hour to many years) and lead times (from one hour to several years) might be separate markets if competitive conditions vary significantly depending on duration or lead time. Within the context of traditional industry organization, this suggests the possible delineation of at least four product markets—short-term energy, intermediate-term energy and capacity, long-term capacity, and ancillary services such as voltage support and spinning reserves.

The “long term” is a period entailing sufficient lead time that not-yet-built capacity can compete on an essentially equal basis with existing capacity. Competitive conditions may be very different when new entrants can compete than when they cannot. The “short term” is a hour, a day, or possibly a somewhat longer period. The “intermediate term” is everything between the short term and the long term. Intermediate-term transactions may be used much like long-term transactions, to provide reserves, and serve a system planning function not well served by short-term energy transactions, but they do not involve a planning horizon long enough to allow new capacity to be constructed. The demand for ancillary services such as voltage support and spinning reserves may be highly localized, so competitive conditions could be very different for them than for short-term energy. Buyers can substitute to some extent among all four types of transactions, but probably not enough to prevent the exercise of market power in just one of them. Moreover, substantial replacement of today’s primarily vertically integrated procurement structure with reliance on an organized spot-market pool could alter both the desirability of particular types of transactions and the substitutability of various transactions. A full analysis under the Guidelines would examine any substitution possibilities to assure that a hypothetical monopolist would possess significant market power in each delineated relevant product market.

B. Geographic Markets

For each product market in which the merging firms may participate, it is appropriate to delineate the relevant geographic market or markets in which the firms compete. Geographic markets for electric power are limited in scope by both physical constraints and by economic costs. The latter consists of the charges for transmission, as well as line losses and any additional effects on system operating costs imposed by the transaction and borne by the parties to it.

With no physical constraints in the network, the scope of geographic markets would always be determined by the economic costs of transmission, just as transportation costs determine the scope of geographic markets in other contexts. However, physical transmission constraints clearly do arise at times, and they are likely to limit the scope of geographic markets when they do arise. Moreover, the high load conditions that give rise to transmission constraints may be those of greatest interest to the competitive analysis of a merger because they give rise to relatively narrow markets which may pose the greatest competitive concerns. Thus, the identification of transmission constraints can be expected to play a central role in geographic market delineation for electric power.

An idea of geographic market boundaries could be gleaned from the identification of significant transmission bottlenecks given existing trading patterns. This should be relatively easy to do, but it must be recognized that patterns of trade in historical data were not premised on open access transmission and that attempts to exercise market power could induce substitution to more distant sources of supply than have previously been relied upon. In addition, the presence of a transmission constraint need not absolutely establish a geographic market because the limited transmission capacity between adjoining areas may nevertheless be sufficient so that each tightly constrains pricing in the other.

A more refined analysis presents a considerable challenge because all points on the network are connected electrically, and any one transfer of power affects, often substantially, the ability of the system to make other transfers. This challenge can be met by using a sophisticated transmission model.⁶ Specifying transmission prices and competitive reactions by other

⁶ General Electric's MAPS model could be suitable. It attempts to incorporate physical and operational details of the transmission network and has been used to model power flows in large regions of the country.

generating units, such a model could be used to apply the Guidelines' hypothetical monopolist test.⁷ This would have to be done for at least several, and perhaps many, different load conditions. As explained above, differing demands, generation unit availabilities, and especially transmission loadings can be expected to greatly affect the market power of the hypothetical monopolist. Moreover, the least-cost mix of generating plants will depend on the level of the equilibrium price because different plants have different cost characteristics. Once the modeling is completed, it should be a simple matter to incorporate changes in things like transmission charges and fuel prices.

The Guidelines specify that each generating unit of each merging firm be a starting point for the application of the hypothetical monopolist test. While the starting point for the test does matter, many proximate starting points normally would yield the same relevant geographic market. Thus, the test need not be repeated for every single unit.

It is possible, however, that relevant geographic markets are asymmetric in the sense that the relevant geographic market for unit A includes unit B, but the relevant geographic market for unit B does not include unit A. This sort of result is especially likely when there is a relatively steep price gradient in a particular direction, for example, if the local equilibrium price of energy increases significantly going from east to west along a transmission corridor. In such situations, lower-cost eastern generation might be in the relevant market for higher-cost western generation, even though the western generation is not in the relevant market for eastern generation.

II. Identifying Competitors in the Relevant Markets, Assigning Shares, and Measuring Concentration

A. Identifying Competitors

Identifying competitors in electric power markets typically is a simple process. Once relevant markets have been delineated, the competitors (e.g., generating units) in them are those

⁷ It would be necessary to incorporate accurate capacity and marginal cost information for individual generating units, and the latter information may be considered competitively sensitive both by the individual utilities and by the antitrust enforcement agencies. Although this data is available, cooperation by utilities probably would have to be enlisted, and procedures probably would have to be established to maintain the confidentiality of sensitive information needed for the simulations.

that currently sell in them or could easily begin selling in them. Whether a generating unit sells in a relevant market could be determined in two ways—on the basis of the physical location of the unit, or on the basis of the disposition of the power from the unit. As a general matter, the Guidelines take the former approach.⁸ There are also practical reasons to prefer it in the electric power industry. The physical locations of units is a simple objective issue. By contrast, the disposition of the power from them is a fairly complex matter of engineering and physics that can be examined usefully only through computer simulations of the network, and that could change drastically depending on load and other conditions. Even if such simulations were totally accurate, reliance on them in this context would add cost and complexity to the process, particularly in the treatment of new facilities.

B. Assigning Market Shares

As is explained further in the discussion of competitive effects, market share is an important factor determining a firm's incentive to withhold supply from the market to raise price, because it relates to the ability to restrict supply and to the proportion of benefits from a price increase that will be captured by the firm. As a general matter, market shares can be assigned on the basis of any appropriate measure of production, sales, or capacity. The Guidelines prefer capacity-based measures of shares for homogeneous products such as electric power, because the ability to produce can be rapidly translated in to actual sales. Actually assigning market shares, however, requires addressing additional issues because differing units have very different characteristics.

The marginal operating costs of different units can vary dramatically. The generating resources from which it is most profitable to restrict supply are those with operating costs at near the competitive equilibrium price. This may suggest assigning market shares solely to such capacity or attributing special weight to such capacity in assigning market shares, but low-cost capacity benefits equally from a supply restriction, and a substantial range of different prices may

⁸ The Guidelines take the latter approach only in the case of markets defined on the basis of the potential for a hypothetical monopolists to engage in price discrimination and exercise market power against just particular customers. While that certainly is possible in the electric power industry, it does not appear that it is likely to be common.

prevail in competitive equilibrium. On the other hand, generation resources should be assigned market shares of zero if it can be established that they would have marginal operating costs far in excess of foreseeable prevailing prices. Thus, while very high cost capacity should be treated specially in assigning market shares, all other capacity might best be treated equally.⁹

Apart from marginal operational cost, different units of capacity also may differ with respect to contractual or other commitments. While the market share assigned to capacity normally should be attributed to the owner of that capacity, that is not the case if (within the relevant time frame) either that capacity or the energy produced from it has been sold in advance at a fixed price. In that event, the ability to profit from restricting supply has been contracted away, as presumably has been the ability to restrict supply. Thus, under plausible conditions it would be appropriate to attribute the market share assigned to contracted capacity to the buyer under the contract.

Capacity committed to serve retail customers, either under long-term contracts or through traditional utility service subject to cost-of-service regulation, could be attributed to the retail customers in assigning market shares, although it may be preferable not to assign a share to such capacity in the first place if the capacity can neither be withheld from the market to drive up price nor used to replace other capacity that is withheld. This sort of commitment is not present, however, when a vertically integrated utility sells, through a pool, generation that is purchased by its distribution operations at market prices passed through to retail customers. Supply can be withheld from this capacity, and benefits in the form of higher price can be derived from withholding it.¹⁰

⁹ Particularly in the context of safe harbor levels of market shares or concentration, it might be useful to employ more than one set of market shares, for example, one for all capacity (except very high cost capacity) and one for mid-marginal cost capacity, consisting of fossil-fueled units with relatively high average load factors. A merger could be placed in the safe harbor, for example, only if it qualified under both sets of market shares.

¹⁰ The proper treatment of capacity commitment would not seem to depend on the location of the retail customers to whom the commitment is made, e.g., on whether they are located in the relevant market.

C. Measuring Concentration

Having assigned market shares, it is useful to summarize those shares with an index of market concentration. For this task, the Guidelines employ the Herfindahl-Hirschman Index or HHI. It is computed by squaring each market share, then adding up the squared shares. For example, with three firms having shares of 20%, 30%, and 50%, the HHI would be $400 + 900 + 2,500 = 3,800$. The HHI approaches zero if there are a very large number of very small firms, and equals 10,000 if there is just one firm.

The Guidelines articulate general enforcement standards for horizontal mergers based on two measures of market shares and concentration—the “increase in the HHI,” defined as twice the product of the pre-merger shares of the merging firms, and the “post-merger HHI,” defined as the pre-merger HHI for the relevant market plus the “increase in the HHI.” The Guidelines state that a merger falls within a safe harbor if the “post-merger HHI” for the relevant market is at most 1,000 or the “increase in the HHI” is at most 50. If the “post-merger HHI” exceeds 1,800, the Guidelines “presume that mergers producing an increase in the HHI of more than 100 points are likely to create or enhance market power,” but this presumption may be overcome by other factors considered in the competitive effects analysis.

III. Analyzing Likely Competitive Effects, Assessing Conditions of Entry, and Considering Offsetting Efficiencies

A. Competitive Effects¹¹

The Guidelines do not base enforcement judgments solely on market shares and concentration. Rather, they undertake to assess the significance of particular market shares and concentration in light of theories of possible anticompetitive effects of the merger on competition. The Guidelines separate these theories into two categories—“coordinated” and “unilateral.” Unilateral effects are those arising from internalizing the direct competition between the merging

¹¹ This Appendix does not address the competitive concerns that may arise from vertical aspects of electric utility mergers. They may be important, depending on a number of considerations, including the effectiveness of the Commission’s open-access policy.

firms in the profit-maximization calculus of the merged firm. Coordinated effects are other horizontal effects, such as the increased likelihood of some form of collusion.

The simplest unilateral effects theory is based on the dominant-firm oligopoly model, in which a single, large firm acts as a monopolist with respect to that portion of the market demand curve not served by the remaining firms—collectively referred to as the “competitive fringe.” Consideration of the application of this model to the electric power industry is useful because it describes how market power can be exercised and the essential determinants of market power.

The dominant firm engages in cost-benefit trade-off to determine how much to restrict output. Given the industry demand, two factors determine the benefit side of the market power trade-off—how much of industry output the dominant firm accounts for, and how responsive to a price increase is supply from the competitive fringe. As the dominant firm restricts output and drives up price, the higher price confers benefits on all firms in the industry that make sales, but its share of those benefits drives its decision making, and its share of those benefits is indicated by its share of the remaining industry output after the output restriction. This is why the combined market share of the merged firm is a central focus in merger analysis.

As the dominant firm restricts output, the competitive fringe finds it profitable to increase its output. If the fringe would make up for all of the output restriction using resources with the same marginal cost as those from which supply was restricted, then the dominant firm would have no market power because the output restriction would not drive up price. As a general matter, the market power of a dominant firm is greater the less responsive to a price increase is the supply by its rivals in the neighborhood of the competitive price. Thus, an important (and potentially decisive) issue in a competitive effects analysis would be the how flat the supply curve for the nonmerging firms would be at plausible competitive prices.

On the cost side of the market power trade-off is the profit that must be foregone if output is restricted, and that is indicated by the difference between price and marginal cost for each unit of output restricted. Restricting output is costless in a sense for a unit with an operating cost just equal to the prevailing price. Restricting output is highly costly for a unit with an operating cost far below the prevailing price. This explains why control of mid-marginal cost capacity is of

particular interest in the analysis of an electric utility merger and why such capacity would be a special focus in a competitive effects analysis if shares were based on total capacity.¹²

Also within the rubric of unilateral competitive effects are models in which competitors compete by setting their output levels or bidding supply schedules into a pool, based on consideration of just their own profits. These noncooperative oligopoly models suggest that number and size distribution of competitors has important effects on equilibrium price and output, and that substantial mergers are likely to lead to significant price increases when numbers are few. In addition to relying on these models for this very general prediction, they also could be used to examine the effects of a merger using such a model within computer simulations like those described above for delineating markets.

Collusion in one form or another may be a significant concern when the number of competitors is small. Collusion models do not permit specific predictions about the relationship between the size distribution of firms and industry performance, but as a general matter greater concentration makes it easier to coordinate supply restrictions in many ways and more likely that individual competitors would willingly participate in cartel-like behavior rather than attempt to “free-ride” on such conduct by rivals.

One form of collusion studied a great deal in the theoretical economic literature arises from repeated play of the same oligopoly game. Factors tending to facilitate this form of collusion are the frequently repeated power auctions for a homogeneous product under similar load conditions, relatively intimate knowledge of rivals' operating costs, and almost immediate knowledge of rivals' actions. The first two factors make it easier to arrive at an understanding regarding collusive outputs, while the third factor greatly limits the gains from cheating on any tacit agreement before that cheating is detected by rivals.

Relevant to the likelihood of this form of collusion and generally important in a competitive effects analysis of an electric power merger are the effects of forward contracts. A generator can

¹² In precisely the way in which computer simulations can be helpful in delineating markets, they also can be helpful in gauging the market power of the merged firm under the dominant firm model. The only difference in the simulations would be that the group of units under control of the hypothetical monopolist would be those of the merging firms. This approach could be an alternative to reliance on market shares in delineated markets, since that exercise would be subsumed in the dominant firm simulations.

sell much or all of its energy well in advance. Thus, for example, a generator could cheat on a cartel for not just one hour before being detected, but potentially for twenty years. This possibility can substantially affect the likelihood of collusion. Moreover, forward contracts enlarge the set of competitive strategies by competing sellers, and may offer large buyers opportunities to behave strategically to protect against supracompetitive prices.

B. Entry

Entry, as that term is used by the Guidelines, involves significant investments in new productive facilities and the commitment of those assets to a market. Entry has at least a theoretical potential substantially to mitigate the exercise of market power following a merger or even to prevent it altogether. If incumbent firms believe that an exercise of market power would bring competing assets into their markets, which by virtue of their durability and specialization substantially reduce the value of the incumbents' own assets, entry or the threat of entry actually can prevent the exercise of market power.

In some cases it may be apparent that entry could not significantly mitigate anticompetitive effects because entry is inherently infeasible. That could be the case in the context of an electric power merger if competitively viable entry would require access to scarce resources that are unavailable to entrants. While not especially likely, this could occur, for example, where competitively viable entry would have to take the form of a mine-mouth, coal-fired plant. Entry in a relevant market also could be infeasible due to environmental or other regulatory constraints.

To ascertain whether entry would be likely to deter or substantially mitigate the exercise of market power possibly occasioned by a merger, the Guidelines suggest an examination of the timeliness, likelihood, and sufficiency of entry. In a variety of situations, entry would not be likely or sufficient. Entry would not likely mitigate the anticompetitive effects of a merger in a chronic overcapacity situation, because an entrant would have to cover both operating costs and fixed costs, whereas the competitive price would cover only operating costs until the overcapacity was eliminated. Entry would not likely mitigate the anticompetitive effects of a merger if potential entrants feared that they would be denied the opportunity to utilize their capacity as efficiently as incumbents. An entrant might expect that a merged firm exercising market power would decline to purchase its power, even though differences in peaks would make

that efficient. Entry would not likely mitigate anticompetitive effects of a merger for a product jointly produced with others. For example, market power in a market for local voltage support might not attract entry because voltage support could account for only a small fraction of the output of a new unit at efficient scale.

For entry to be timely, the Guidelines suggest a two year horizon, and typically, the addition of new generating capacity requires more than two years to plan and complete. Thus, entry most likely would not be timely in the relevant market for short-term energy transactions. On the other hand, entry could be timely in the relevant market for long-term capacity transactions, even if it took more than two years for the physical assets to be put in place. For example, if distribution utilities request bids for long-term power supplies to commence delivery in five years, and five years is sufficiently long so that new entrants can compete, then at least from a timing standpoint, new entrants can compete on an equal basis with incumbents. The entry lag is not five years at all, since entrants can compete for contracts today.

C. Efficiencies

Although a merger creates or enhances market power it may nevertheless be socially desirable because it also generates substantial efficiencies. Indeed, with sufficient cost reductions, a merger can cause prices to fall even though it creates market power. Thus, it is appropriate to consider any offsetting efficiency benefits from a merger.¹³ It is important, however, to assure that any efficiency claims are carefully documented and that the claimed efficiencies are attributable to the proposed merger and would not be reasonably achievable without any anticompetitive effects of the merger. Restructuring of various sorts commonly accompanies mergers, but to the extent that such restructuring can be achieved without the merger, any cost reductions attributable to the restructuring are not attributable to the merger.

¹³ If the efficiencies could not be achieved without also causing the anticompetitive effects from the merger, the efficiencies should be considered in determining the merger's net effect.